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Wireless Communications: lecture 10 of 11 - MIMO Lecture 37: BER Performance of ZF Receiver Zero forcing ZF Equalizer | MMSE Equalizer | Zero Forcing Receiver | Examples ~~26 (Zero Forcing algorithm, MMSE receiver) Lecture 21 MIMO System Model and Zero Forcing Receiver~~

~~What is ZERO-FORCING PRECODING? What does ZERO-FORCING PRECODING mean? Example of ISI Channel and Least Squares based Zero Forcing~~

~~MATH 595 - 24 March 2017 Addressing; Zero forcing~~

~~MATH 595 - 27 March 2017 Zero forcing Lecture 36: MIMO Receivers **Mod-01 Lec-21 MIMO System Model and Zero-Forcing Receiver** Which Variables Can be Optimized in Wireless Communications?~~

~~Morley Vector Zero 2 Re Cap, Model Railway Controller Signalling your layout - Ground, Repeater and Calling On Signals MIMO and Beamforming in Wireless Systems (4G, 5G) LTE: MIMO and OFDM Signal-to-Noise Ratio in Wireless Communications [Video 1] What is Beamforming \u0026 Types of Beamforming - DAY6B Introduction to ISI and Nyquist Criterion What is Beamforming (Massive MIMO)? Find Out With Mpirical How to Understand 5G: Beamforming Autocorrelation property of PN sequence by Dr. K. Vinoth Babu, VIT Zero Forcing Algorithm Lec 37 | Applied Optimization | Zero Forcing (ZF) Beamforming with Interfering User | HIT Kanpur Mod-01 Lec-22 MIMO MMSE Receiver and Introduction to SVD~~

~~SIR Models, Predator Prey and Inverted Pendulums MIMO Communications **Least Squares based Zero Forcing Channel Equalizer** ME564 Lecture 11: Degenerate systems of equations and non-normal energy growth GRCon19 - Performance Evaluation of MIMO Techniques With an SDR-Based Prototype by Evariste Some Matlab Code Zero Forcing~~

Zero Forcing Equalizer is a type of linear equalizers used to combat ISI (inter symbol interference). This code is a demonstration of a simple implementation of Zero Forcing Equalizer using MatLab tools.

~~Zero Forcing Equalizer File Exchange MATLAB Central~~

The equalization scheme used is Zero Forcing. As expected, the simulated results with a 2x2 MIMO system using BPSK modulation in Rayleigh channel is showing matching results as obtained in for a 1x1 system for BPSK modulation in Rayleigh channel. For more theoretical description of Zero Forcing Equalization in 2x2 MIMO channel, please check

~~MIMO with Zero Forcing equalizer File Exchange MATLAB ...~~

This MATLAB function returns equalized data in multidimensional array, out, by applying MIMO zero-forcing equalization to the received data resource grid in matrix rxgrid, using the channel information in the channelest input matrix.

~~Zero forcing equalization MATLAB lteEqualizeZF ...~~

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In this post, let's discuss a frequency selective channel with the use of Zero Forcing (ZF) equalization to compensate for the inter symbol interference (ISI). For simplifying the discussion, we will assume that there is no pulse shaping at the transmitter. The ISI channel is assumed to be a fixed 3 tap channel.

~~BER for BPSK in ISI channel with Zero Forcing equalization~~

4) All clear figures and matlab codes are required for project report. Project need to have about 70-90 pages. Report needs to include - Using Matlab, Breakdown individual figure (plot) of QPSK modulation,

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Rayleigh Fading model, Zero-forcing equalizer, QPSK demodulation whichever is possible - BER comparison graphs

~~Application of Zero Forcing Equalizer in Digital Comm ...~~

I'm trying to fit a serie of datapoints with a function $f(x)$ (e.g. a polynomial function) by forcing the value of the function at $x=0$. I tried to find the solution using "fit" and "polyfit" Matlab functions but the interpolating algorithm doesn't seem to take into account the initial value that I want.

~~How to fit a curve with forced initial value - MATLAB ...~~

Hi, I search Matlab code how to estimate Rayleigh channel using block-type LS and equalize it using zero forcing and MMSE and study their performance? Question 6 answers

~~Matlab code for Zf detection in MIMO?~~

equalizers zero forcing equalizer advantages disadvantages project equalizer using matlab 'Zero Forcing Equalizer Simulation Makers Of MATLAB And April 24th, 2018 - This Code Is A Simulation To Show How To Use Zero Forcing Equalizer This Code Is A Follow Up To An

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This codes is a. demonstration of a. %simple implemenation of. Zero Forcing Equalizer using MatLab tools. % A. typical channel is model in discrete domain as: %%%%% y [n]=h [n]*x [n]+z [n] % where y [n] is channel output, x [n] is channel input, h [n] is. channal. Zero Forsing Equalizer - File Exchange -.

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Zero Forcing with Successive Interference Cancellation (ZF-SIC) Using the Zero Forcing (ZF) equalization approach described above, the receiver can obtain an estimate of the two transmitted symbols , , i.e.. Take one of the estimated symbols (for example) and subtract its effect from the received vector and , i.e.. Expressing in matrix notation,,

~~MIMO with Zero Forcing Successive Interference ...~~

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WIRELESS COMMUNICATION SIGNALS A practical guide to wireless communication systems and concepts Wireless technologies and services have evolved significantly over the last couple of decades, and Wireless Communication Signals offers an important guide to the most recent advances in wireless communication systems and concepts grounded in a practical and laboratory perspective. Written by a noted expert on the topic, the book provides the information needed to model, simulate, test, and analyze wireless system and wireless circuits using modern instrumentation and computer aided design software. Designed as a practical resource, the book provides a clear understanding of the basic theory, software simulation, hardware test, and modeling, system component testing, software and hardware interactions and co-simulations. This important book: Provides organic and harmonized coverage of wireless communication systems Covers a range of systems from radio hardware to digital baseband signal processing Presents information on testing and measurement of wireless communication systems and subsystems Includes MATLAB file codes Written for professionals in the communications industry, technical managers, and researchers in both academia and industry. Wireless Communication Signals introduces wireless communication systems and concepts from both a practical and laboratory perspective.

This is the first textbook that contains a holistic treatment of antennas both for traditional antennas mounted on masts (Line-of-Sight antenna systems) and for small antennas used on modern wireless devices such as smart phones being subject to signal variations (fading) due to multipath propagation. The focus is on characterization, as well as describing classical antennas by modern complex vector theory -

thereby linking together many disciplines such as electromagnetic theory, classical antenna theory, wave propagation, and antenna system performance. Overall, this book represents a rethinking of the way basic antenna theory is presented. The book contains many references to important old and new papers and books on the analysis and design of the most useful antenna types, for the most interested readers.

An introduction to technical details related to the Physical Layer of the LTE standard with MATLAB® The LTE (Long Term Evolution) and LTE-Advanced are among the latest mobile communications standards, designed to realize the dream of a truly global, fast, all-IP-based, secure broadband mobile access technology. This book examines the Physical Layer (PHY) of the LTE standards by incorporating three conceptual elements: an overview of the theory behind key enabling technologies; a concise discussion regarding standard specifications; and the MATLAB® algorithms needed to simulate the standard. The use of MATLAB®, a widely used technical computing language, is one of the distinguishing features of this book. Through a series of MATLAB® programs, the author explores each of the enabling technologies, pedagogically synthesizes an LTE PHY system model, and evaluates system performance at each stage. Following this step-by-step process, readers will achieve deeper understanding of LTE concepts and specifications through simulations. Key Features: • Accessible, intuitive, and progressive; one of the few books to focus primarily on the modeling, simulation, and implementation of the LTE PHY standard • Includes case studies and test benches in MATLAB®, which build knowledge gradually and incrementally until a functional specification for the LTE PHY is attained • Accompanying Web site includes all MATLAB® programs, together with PowerPoint slides and other illustrative examples Dr Houman Zarrinkoub has served as a development manager and now as a senior product manager with MathWorks, based in Massachusetts, USA. Within his 12 years at MathWorks, he has been responsible for multiple signal processing and communications software tools. Prior to MathWorks, he was a research scientist in the Wireless Group at Nortel Networks, where he contributed to multiple standardization projects for 3G mobile technologies. He has been awarded multiple patents on topics related to computer simulations. He holds a BSc degree in Electrical Engineering from McGill University and MSc and PhD degrees in Telecommunications from the Institut Nationale de la Recherche Scientifique, in Canada.

<http://www.wiley.com/go/zarrinkoub>

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Carefully structured to instill practical knowledge of fundamental issues, Optical Fiber Communication Systems with MATLAB® and Simulink® Models describes the modeling of optically amplified fiber communications systems using MATLAB® and Simulink®. This lecture-based book focuses on concepts and interpretation, mathematical procedures, and engineering applications, shedding light on device behavior and dynamics through computer modeling. Supplying a deeper understanding of the current and future state of optical systems and networks, this Second Edition: Reflects the latest developments in optical fiber communications technology Includes new and updated case studies, examples, end-of-chapter problems, and MATLAB® and Simulink® models Emphasizes DSP-based coherent reception techniques essential to advancement in short- and long-term optical transmission networks Optical Fiber Communication Systems with MATLAB® and Simulink® Models, Second Edition is intended for use in university and professional training courses in the specialized field of optical communications. This text should also appeal to students of engineering and science who have already taken courses in electromagnetic theory, signal processing, and digital communications, as well as to optical engineers, designers, and practitioners in industry.

This book discusses the latest channel coding techniques, MIMO systems, and 5G channel coding evolution. It provides a comprehensive overview of channel coding, covering modern techniques such as turbo codes, low-density parity-check (LDPC) codes, space-time coding, polar codes, LT codes, and Raptor codes as well as the traditional codes such as cyclic codes, BCH, RS codes, and convolutional codes. It also explores MIMO communications, which is an effective method for high-speed or high-reliability wireless communications. It also examines the evolution of 5G channel coding techniques. Each of the 13 chapters features numerous illustrative examples for easy understanding of the coding techniques, and MATLAB-based programs are integrated in the text to enhance readers' grasp of the underlying theories. Further, PC-based MATLAB m-files for illustrative examples are included for students and researchers involved in advanced and current concepts of coding theory.

MIMO-OFDM is a key technology for next-generation cellular communications (3GPP-LTE, Mobile WiMAX, IMT-Advanced) as well as wireless LAN (IEEE 802.11a, IEEE 802.11n), wireless PAN (MB-OFDM), and broadcasting (DAB, DVB, DMB). In MIMO-OFDM Wireless Communications with MATLAB®, the authors provide a comprehensive introduction to the theory and practice of wireless channel modeling, OFDM, and MIMO, using MATLAB® programs to simulate the various techniques on MIMO-OFDM systems. One of the only books in the area

dedicated to explaining simulation aspects Covers implementation to help cement the key concepts Uses materials that have been classroom-tested in numerous universities Provides the analytic solutions and practical examples with downloadable MATLAB® codes Simulation examples based on actual industry and research projects Presentation slides with key equations and figures for instructor use MIMO-OFDM Wireless Communications with MATLAB® is a key text for graduate students in wireless communications. Professionals and technicians in wireless communication fields, graduate students in signal processing, as well as senior undergraduates majoring in wireless communications will find this book a practical introduction to the MIMO-OFDM techniques. Instructor materials and MATLAB® code examples available for download at www.wiley.com/go/chomimo

Chapter 1: Fourier Analysis 1 1.1 CONTINUOUS-TIME FOURIER SERIES (CTFS)..... 2 1.2 PROPERTIES OF CTFS..... 6 1.2.1 Time-Shifting Property..... 6 1.2.2 Frequency-Shifting Property..... 6 1.2.3 Modulation Property..... 6 1.3 CONTINUOUS-TIME FOURIER TRANSFORM (CTFT)..... 7 1.4 PROPERTIES OF CTFT..... 13 1.4.1 Linearity..... 13 1.4.2 Conjugate Symmetry..... 13 1.4.3 Real Translation (Time Shifting) and Complex Translation (Frequency Shifting)..... 14 1.4.4 Real Convolution and Correlation..... 14 1.4.5 Complex Convolution - Modulation/Windowing..... 14 1.4.6 Duality..... 17 1.4.7 Parseval Relation - Power Theorem..... 18 1.5 DISCRETE-TIME FOURIER TRANSFORM (DTFT)..... 18 1.6 DISCRETE-TIME FOURIER SERIES - DFS/DFT..... 19 1.7 SAMPLING THEOREM..... 21 1.7.1 Relationship between CTFS and DFS..... 21 1.7.2 Relationship between CTFT and DTFT..... 27 1.7.3 Sampling Theorem..... 27 1.8 POWER, ENERGY, AND CORRELATION..... 29 1.9 LOWPASS EQUIVALENT OF BANDPASS SIGNALS..... 30 Chapter 2: PROBABILITY AND RANDOM PROCESSES 39 2.1 PROBABILITY..... 39 2.1.1 Definition of Probability..... 39 2.1.2 Joint Probability and Conditional Probability..... 40 2.1.3 Probability Distribution/Density Function..... 41 2.1.4 Joint Probability Density Function..... 41 2.1.5 Conditional Probability Density Function..... 41 2.1.6 Independence..... 41 2.1.7 Function of a Random Variable..... 42 2.1.8 Expectation, Covariance, and Correlation..... 43 2.1.9 Conditional Expectation..... 47 2.1.10 Central Limit Theorem - Normal Convergence Theorem..... 47 2.1.11 Random Processes..... 49 2.1.12 Stationary Processes and Ergodic Processes..... 51 2.1.13 Power Spectral Density (PSD)..... 53 2.1.14 White Noise and Colored Noise..... 53 2.2 LINEAR FILTERING OF A RANDOM PROCESS..... 57 2.3 PSD OF A RANDOM PROCESS..... 58 2.4 FADING EFFECT OF A MULTIPATH CHANNEL..... 58 Chapter 3: ANALOG MODULATION 71 3.1 AMPLITUDE MODULATION (AM)..... 71 3.1.1 DSB (Double Sideband)-AM (Amplitude Modulation)..... 71 3.1.2 Conventional AM (Amplitude Modulation)..... 75 3.1.3 SSB (Single Sideband)-AM(Amplitude Modulation)..... 78 3.2 ANGLE MODULATION (AGM) - FREQUENCY/PHASE MODULATIONS 82 Chapter 4: ANALOG-TO-

DIGITAL CONVERSION 87 4.1 QUANTIZATION..... 87 4.1.1 Uniform Quantization..... 88 4.1.2 Non-uniform Q
uantization.....
. 89 4.1.3 Non-uniform Quantization Considering the Absolute Errors
91 4.2 Pulse Code Modulation
(PCM).....
95 4.3 Differential Pulse Code Modulation
(DPCM)..... 97 4.4 Delta
Modulation (DM).....
..... 100 Chapter 5: BASEBAND TRANSMISSION 107 5.1 RECEIVER (RCVR) and SNR
..... 107
5.1.1 Receiver of RC Filter
Type..... 109 5.1.2
Receiver of Matched Filter
Type..... 110 5.1.3 Signal C
orrelator.....
..... 112 5.2 PROBABILITY OF ERROR WITH
SIGNALING..... 114 5.2.1 Antipodal (Bipolar)
Signaling..... 114
5.2.2 On-Off Keying (OOK)/Unipolar
Signaling..... 118 5.2.3 Orthogonal Signalin
g.....
119 5.2.4 Signal Constellation
Diagram..... 121 5.2.5
Simulation of Binary
Communication..... 123 5.2.6 Multi-
Level(amplitude) PAM Signaling..... 127
5.2.7 Multi-Dimensional
Signaling..... 129
5.2.8 Bi-Orthogonal
Signaling.....
133 Chapter 6: BANDLIMITED CHANNEL AND EQUALIZER 139 6.1 BANDLIMITED CHANNEL.....
..... 139 6.1.1 Nyquist Bandwidth.....
..... 139
6.1.2 Raised-Cosine Frequency
Response..... 141 6.1.3 Partial
Response Signaling - Duobinary Signaling..... 143 6.2 EQ
UALIZER.....
..... 148 6.2.1 Zero-Forcing Equalizer
(ZFE)..... 148 6.2.2
MMSE Equalizer
(MMSEE)..... 151
6.2.3 Adaptive Equalizer
(ADE)..... 154
6.2.4 Decision Feedback Equalizer
(DFE)..... 155 Chapter 7:
BANDPASS TRANSMISSION 169 7.1 AMPLITUDE SHIFT KEYING
(ASK)..... 169 7.2
FREQUENCY SHIFT KEYING
(FSK)..... 178 7.3 PHASE
SHIFT KEYING
(PSK)..... 187
7.4 DIFFERENTIAL PHASE SHIFT KEYING (DPSK).....
190 7.5 QUADRATURE AMPLITUDE MODULATION (QAM)..... 195
7.6 COMPARISON OF VARIOUS
SIGNALINGS..... 200 Chapter 8: CARRIER
RECOVERY AND SYMBOL SYNCHRONIZATION 227 8.1 INTRODUCTION.....
..... 227 8.2 PLL (PHSE-LOCKED
LOOP).....
228 8.3 ESTIMATION OF CARRIER PHASE USING
PLL..... 233 8.4 CARRIER PHASE
RECOVERY.....
235 8.4.1 Carrier Phase Recovery Using a Squaring Loop for BPSK Signals..... 235
8.4.2 Carrier Phase Recovery Using Costas Loop for PSK Signals..... 237
8.4.3 Carrier Phase Recovery for QAM
Signals..... 240 8.5 SYMBOL SYNCHRONIZATION
(TIMING RECOVERY)..... 243 8.5.1 Early-Late Gate Timing
Recovery for BPSK Signals..... 243 8.5.2 NDA-ELD Synchronizer
for PSK Signals..... 246 Chapter 9:
INFORMATION AND CODING 257 9.1 MEASURE OF INFORMATION -
ENTROPY..... 257 9.2 SOURCE CODING.....
.....

..... 259 9.2.1 Huffman Coding.....

..... 259 9.2.2 Lempel-Zip-Welch Coding..... 262

9.2.3 Source Coding vs. Channel Coding..... 265 9.3 CHANNEL MODEL AND CHANNEL CAPACITY..... 266 9.4 CHANNEL CODING.....

..... 271 9.4.1 Waveform Coding.....

..... 272 9.4.2 Linear Block Coding.....

..... 273 9.4.3 Cyclic Coding..... 282

9.4.4 Convolutional Coding and Viterbi Decoding..... 287 9.4.5 Trellis-Coded Modulation (TCM)..... 296

9.4.6 Turbo Coding.....

..... 300 9.4.7 Low-Density Parity-Check (LDPC) Coding..... 311 9.4.8 Differential Space-Time Block Coding (DSTBC)..... 316 9.5 CODING GAIN

..... 319 Chapter 10: SPREAD-SPECTRUM SYSTEM 339 10.1 PN (Pseudo Noise) Sequence.....

..... 339 10.2 DS-SS (Direct Sequence Spread Spectrum).....

347 10.3 FH-SS (Frequency Hopping Spread Spectrum)..... 352 Chapter 11: OFDM SYSTEM 359 11.1 OVERVIEW OF OFDM.....

..... 359 11.2 FREQUENCY BAND AND BANDWIDTH EFFICIENCY OF OFDM..... 363 11.3 CARRIER RECOVERY AND SYMBOL SYNCHRONIZATION..... 364 11.4 CHANNEL ESTIMATION AND EQUALIZATION..... 381 11.5 INTERLEAVING AND DEINTERLEAVING..... 384 11.6 PUNCTURING AND DEPUNCTURING..... 386 11.7 IEEE STANDARD 802.11A - 1999..... 388

Advanced Engineering Mathematics with MATLAB, Fourth Edition builds upon three successful previous editions. It is written for today's STEM (science, technology, engineering, and mathematics) student. Three assumptions under lie its structure: (1) All students need a firm grasp of the traditional disciplines of ordinary and partial differential equations, vector calculus and linear algebra. (2) The modern student must have a strong foundation in transform methods because they provide the mathematical basis for electrical and communication studies. (3) The biological revolution requires an understanding of stochastic (random) processes. The chapter on Complex Variables, positioned as the first chapter in previous editions, is now moved to Chapter 10. The author employs MATLAB to reinforce concepts and solve problems that require heavy computation. Along with several updates and changes from the third edition, the text continues to evolve to meet the needs of today's instructors and students.

Advances in Computing, Communication, Automation and Biomedical Technology aims to bring together leading academic, scientists, researchers, industry representatives, postdoctoral fellows and research scholars around the world to share their knowledge and research expertise, to advances in the areas of Computing, Communication, Electrical, Civil, Mechanical and Biomedical Systems as well as to create a prospective collaboration and networking on various areas. It also provides a premier interdisciplinary platform for researchers, practitioners, and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered, and solutions adopted in the fields of innovation.

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